

Message

From: MacDonald, Alex@Waterboards [Alex.MacDonald@waterboards.ca.gov]
Sent: 7/3/2017 11:10:09 PM
To: Keller, Lynn [Keller.Lynn@epa.gov]
Subject: FW: DTSC Preliminary Comments on Area 40.

FYI

From: MacDonald, Alex@Waterboards
Sent: Monday, July 03, 2017 4:09 PM
To: MacNicholl, Peter@DTSC
Subject: RE: DTSC Preliminary Comments on Area 40.

Pete – Thanks for the response. Don't have time to respond – but I do not think that you have interpreted my text correctly. I am not doing a snapshot in time and I have not said that additional information is not warranted. I just think that the CSM is much more refined than what I received from the comments supplied by Dan. I was trying to supply additional information and observations that can be used to focus on the information that still needs to be obtained. Together the issues will be resolved.

Alex

From: MacNicholl, Peter@DTSC [<mailto:Peter.MacNicholl@dtsc.ca.gov>]
Sent: Monday, July 03, 2017 8:22 AM
To: MacDonald, Alex@Waterboards; Gallagher, Dan@DTSC
Cc: keller.lynn@epa.gov
Subject: Re: DTSC Preliminary Comments on Area 40.

Hi Alex,

Thanks for your feedback on our comments. I'm not going to go through each of your points as our position is documented and stands by itself but will offer a general conceptual response.

DTSC's new VI guidance that will be utilized for Area 40 suggests that vapor data for decision making should come from permanent monitoring points. This data is collected from consecutive events to record and document the variability of soil gas due to temporal and barometric changes, which has not occurred at Area 40. While it generally appears that finer particles in soil can exist to the north, a review of the soil borings also shows the likelihood of sand lenses and preferential pathways that the vapor plumes would migrate through and doesn't offer any conclusive barrier or preclusion from these mechanisms. Furthermore, the existing data in light of the sampling requirements and even without those considerations does not illustrate a clear and comprehensive delineation of the soil gas plumes. Hence, additional sampling and refinement of the CSM is warranted as identified in our comments. With planned development to the north of the sumps our VI guidance specifies that comprehensive vapor sampling is needed irrespective of the planned vapor barriers. Again, this is why more sampling is needed to the north of the sumps.

Our understanding of Site contaminants and distributions is dynamic and just because you take a snap shot in time does not mean Site conditions will not change or is even reflective of the actual impacts. A great illustration of this is C29/C41 where some parties believed there was no soil gas and minimal (<5ug/L) groundwater contamination but additional sampling offered new unexpected information of what was initially believed to be a essentially clean with little contaminants present.

I hope as the regulatory agencies continue to meet with Aerojet and illustrate the additional sampling requirements the agencies can work in support of each other, otherwise it will become counterproductive and divisive and ultimately detract from the progress of the Project.

Sincerely,

-Pete

From: MacDonald, Alex@Waterboards <Alex.MacDonald@waterboards.ca.gov>

Sent: Friday, June 30, 2017 2:44:38 PM

To: Gallagher, Dan@DTSC

Cc: MacNicholl, Peter@DTSC; keller.lynn@epa.gov

Subject: DTSC Preliminary Comments on Area 40.

Dan – thanks for your comments on the Area 40 work. I have spent many days going over the reports (again) , boring logs – and database for Area 40 and drawing my own figures have some of a different opinion on what we know to date. Your comments and some of what I have come up with are placed below each of your comments. I hope that will help with your understanding of the site.

Configuration of TCE as Shown in Figure 4.1-3

The presentation of the soil gas plume is difficult to interpret based on the presentation of data in Figure 4.1-3. The following items are of concern.

1. **Conceptual Site Model (CSM).** The text states that contaminant sources are sumps and burn pits. Hence, the highest soil gas concentrations should be spatially coincident with the sources, and soil gas concentrations should decrease radially away from the source areas. This pattern of contaminant distribution is not apparent on the figure. Either the CSM warrants updating or some of the soil gas results on the figure are biased low. Due to these discrepancies and those additional items identified below, DTSC recommends further soil gas sampling in both the source area sumps and pits and areas radially outward for a more comprehensive delineation of contaminant distributions. This new data will provide a more accurate and comprehensive delineation of the soil gas plume utilizing contemporary analytical methods. This data is necessary to revise the conceptual site model, determine potential health risks, evaluate soil vapor remedial alternatives. Also, this data will be used to support decisions on the appropriate reuse for the Site.

In my review I am in concurrence with the site conceptual model of the sources being the solvent pits and sumps. The concentrations in the vadose zone – both TCE and perchlorate (both of which were present at high concentrations in the materials placed in the sumps) have the highest concentrations by orders of magnitude within the sump area. In that area soil vapor samples found up to 216,000,000 µg/m³ TCE with the highest concentrations centered around the pits and decreasing laterally from the pit area. You will also notice that the highest concentrations are found at the 20 foot depth and not the 10 foot depth –even at the sump locations themselves. Thus you can see the 1,600,000 µg/m³ TCE at 20 feet in 37B SP23 shows a reasonable gradient down to 710,000 µg/m³ at 37B SP25 and then to 1500 µg/m³ at 37B VW24. The boring logs show that as you move north and west there is nearly all silt. However, back to the east and into the pit area there are areas of coarser grained materials allowing for more vapor transport and so you can see the higher concentrations at 37B SP25. As a comparison, if you look at both the perchlorate and TCE concentrations in groundwater you will not see any perchlorate moving northward as it only moves with groundwater which flows primarily to the west. Looking at TCE you can see where the groundwater in the area north of the Site 37B there are some concentrations of TCE, but no perchlorate. In my view that is indicative of vapor transport of TCE through the vadose zone and causing groundwater contamination. The TCE in groundwater then tends to flow westerly. Continued migration in the vadose zone is impeded by the preponderance of silt with nearly no coarser grained materials. This not to say that some additional sampling may be warranted to the north for some clarification on plume definition. But I believe the model of the source area is sufficient – still significant concentrations of over 10,000,000 µg/m³.

2. Soil Gas Sample Collection. As indicated by the figure, most of the data was collected in 1991. The 1991 data pre-dates regulatory soil gas sampling guidance. For example, the LARWQCB issued their first soil gas guidelines in 1997 and DTSC issued theirs in 2003. The intent of regulatory guidance is to provide a standardized approach for sample collection to alleviate potential field and laboratory bias. Were the 1991 samples subject leak detection protocols and shut-in testing? Also, were the laboratory analytical methods comparable to today's standards? Newer soil gas methods provide a more accurate, higher quality dataset than older methods. Accordingly, further sampling and delineation of the soil gas plume is warranted as indicated in the text above and below.

I concur that the older 1991 soil vapor data has some issues. However, it shows that it is very bad within the source area. If there was a low bias, it would mean it was a bit worse. The older data is not really used to define the extent of the plume – the more recent 2008 and 2014 data was used. The few newer samples collected within the source area confirmed what was found in 1991 at those locations. If better delineation of extent is needed, that is another issue that is not related to the 1991 data

3. Sampling Location 37B-SP25. This soil gas location yielded some of the highest TCE concentrations but the location is approximately 250 feet from a source area. Sample location 37B-SP25 suggests an irregular contaminant distribution pattern. This anomalous data point further illustrates the need for additional soil gas sampling to address uncertainty in the CSM.

As stated above, I do not think the 37B-SP25 concentration suggests an irregular distribution pattern and the uncertainty in the CSM is not large – the only issue I see would be the issue of defining the plume in the vicinity between 37B-SP25 and 37B-VW24 and east and west a bit of that latter point.

4. Vapor Intrusion. Understanding the limits of the TCE soil gas plume is important for vapor intrusion. The limits of the TCE soil gas are not displayed on the figure. Hence, “safe” areas for building locations cannot be ascertained. Likewise, plume areas subject to building mitigation cannot be determined either.

Do not disagree.

5. Plume Delineation. TCE in soil gas is not delineated to the west of sample 36B-SP37. Also, TCE is not delineated between samples 36B-SP25 and 38B-SP13.

The assumption for the area that is west of the sump area is that groundwater concentrations of TCE are around 20,000 µg/L all of the way to Prairie City Road and so the soil vapor within that area is also high – as shown by the 800,000 µg/m³ value at 36B-SP37. The entire area overlying the plume of 5 µg/L TCE or greater + 100 foot buffer is considered to have unacceptable concentrations of TCE.

Draft California Vapor Intrusion Guidance

DTSC is tentatively scheduled to post updated vapor intrusion guidance on our website on September 1, 2017. The guidance describes soil gas sampling recommendations and soil gas screening approaches for vapor intrusion. Some of the items applicable to the Aerojet project are as follows.

- Permanent soil gas probes are warranted at future building locations.
 - Permanent soil gas probes should be sampled 3 to 4 times to evaluate temporal variability in advance of any residential development.
 - Each soil gas probe should have at least two screened intervals.
 - Soil gas contaminants should be evaluated using an attenuation factor of 0.03. Or 0.003 if soil vapor mitigation is going to be required.
 - When soil gas contaminants exceed a risk of 10⁻⁴, remediation, in addition to building mitigation, is warranted.
- For the last bullet, since we are dealing primarily with TCE, should not the Hazard Index of 1 come into play in some manner?

Recommendation

As illustrated above, further soil gas sampling is necessary for the delineation of the contaminant distributions in the sump areas, burn pits, and those locations radially outward. This higher quality data will be used to update and refine the CSM, identify related potential health risks, employ pertinent remedial alternatives, and be used to evaluation proposed reuse options for the Site.

I do not think that additional sampling in the sump areas and burn pits is necessary - The only area that I would consider is to the north and a bit west of Site 37B.

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